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dwindled in importance during the period represented by that gap.

If, mathematically speaking, we let m represent the product of physical conditions in effecting the variation and development of the organism, and n the product of social and moral conditions, we find that m varies inversely as n . If m be infinite and n infinitesimal, as at first, and m continually diminishes while n increases according to definite laws, the attainment of a point at which m is infinitesimal and n infinite is only a question of time.

The conditions of any possible development of man from anthropoid apes appear therefore to require that there *should* be a "missing link," in the sense that physical evidences of intercalary types are unrepresented. The "survival" of the fittest, at a certain period in the history of life, means exactly such survival as would make it improbable that many remains should be preserved, and this survival only the fittest would, under the circumstances, attain. Such anthropoid apes as were capable of generating man should have been superior to those whose remains were preserved because they had not intelligence enough to protect their lives. The first considerable preservation of primitive man would begin when he ventured on navigation; but his remains so preserved will be "missing," until such time as "the sea gives up her dead."

— The committee of Congress which has been investigating the U. S. Geological Survey has not dealt kindly with Major Powell and his charge. There is no intrinsic reason why Congress should not be favorable to the Geological Survey, but there is probably no department where it is less likely to tolerate abuses. We cannot say that the survey has been entirely free from faults of this kind. If Major Powell is carrying any Jonahs he had better relieve himself of them.

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RECENT LITERATURE.

A HAND-BOOK OF PLANT DISSECTION.¹—This long-promised work has at last appeared, and we have no doubt that it will be welcomed by laboratory workers throughout the country. It is apparently an entirely original work, no statements being made at second hand, and no directions for work being given which have not been *actually worked out* by the authors themselves. One finds evidence of this original work on almost every page, and this fact alone will commend the book to all teachers and to every pupil who wishes to become an investigator in structural botany.

¹ *Hand-Book of Plant Dissection*. By J. C. ARTHUR, M.Sc., botanist to the New York Agricultural Experiment Station; CHARLES R. BARNES, M.A., professor of botany in Purdue University, and JOHN M. COULTER, Ph.D., professor of botany in Wabash College; editors of the *Botanical Gazette*. New York, Henry Holt & Company, 1886, pp. xxii, 256, 12 mo, with two plates.

The book opens with two plates, illustrating (1) gross anatomy and (2) minute anatomy, and the methods of recording results by means of the pencil or drawing-pen. This is followed by a chapter on instruments, reagents, section cutting, mounting, etc., etc., in which the treatment is refreshingly non-technical. There is a suggestive absence of the usual "microscopical" lingo, and a plainness of statement which cannot help pleasing every reader.

The succeeding chapters take up in order the following plants, viz., green slime (*Protococcus viridis*), dark-green scum (*Oscillaria tenuis*), common pond scum (*Spirogyra quinina*), white rust (*Cystopus candidus*), lilac mildew (*Microsphaera friesii*), common liverwort (*Marchantia polymorpha*), moss (*Atrichum undulatum*), maiden-hair fern (*Adiantum pedatum*), Scotch pine (*Pinus sylvestris*), field oats (*Avena sativa*), trillium (*Trillium recurvatum*), shepherd's purse (*Capsella bursa-pastoris*). A chapter is devoted to each plant, and in the treatment the gross anatomy is first taken up, and afterwards the minute anatomy. Preceding both, however, is a short statement giving such general facts as to habitat, appearance, structure, development, etc., as will enable the student to find the plant and undertake its study with less difficulty.

It will be observed that the work proceeds from the simple to the complex, and that every great branch of the vegetable kingdom is represented by species which may be obtained easily in in any part of the country. The authors have exercised unusual care, as it appears to us, in this matter, and have succeeded in making a list of illustrative plants which even a tyro will have little difficulty in securing wherever he may happen to be.

We would direct the attention of those who are skeptical as to the possibility of beginners studying the lower forms of vegetation to the gross anatomy studies under each species. The things which can be seen in every one of the lower plants will astonish the old-fashioned teacher. Even in the two protophytes (*Protococcus* and *Oscillaria*), the authors coolly set the student at work, *first*, with nothing but his unaided eyes, or at most with a simple hand-lens; and he is expected to find out a good deal, too, by such means. We venture the assertion that, considering the almost infinitely greater complexity of shepherd's purse over *Protococcus*, the latter has far more which can be made out by gross anatomy than the former. If the student can see little in *Protococcus* with his unaided eyes, or with a hand-lens, it is because there is very little to be seen. The old adage, "a short horse is soon curried," is appropriate here. One must not expect to see as much in *Protococcus* as in *Capsella*, but one must not neglect to see the little that is to be seen.

An excellent pronouncing and descriptive glossary, and a full index, complete the volume.—*Charles E. Bessey.*